



# Describing the Elephant

## Framing a Discussion on Command and Control

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*To believe that the wars of the future, thanks to some extraordinary technological advances yet to take place in such fields as computers or remotely controlled sensors, will be less opaque and therefore more subject to rational calculations than their predecessors is, accordingly, sheer delusion.*

—Martin van Creveld

One of the historical strengths of the US Air Force has been its rapid projection of combat airpower across the globe, leveraging command and control (C2) that expand our range and scope of action. Prior to the end of the Cold War, C2 capacity was closely aligned with the task and level of need. Airborne C2, the service's most operationally flexible component, was a central and understood element of a core mission well suited to tackle an existential war. With the passing of time, the nature of threats to the nation changed, and technology advanced. The Air Force retired legacy airborne and air-control C2 assets, updated remaining programs to reflect the evolving threat, and optimized technology accordingly. In an earlier age, the professionalism of the C2 crews and the singular task of major theater war with the USSR ensured technical competence and mission focus. As the range of threats to which the Department of Defense (DOD) responds has expanded and the effects of fiscal reduction have become manifest, our C2 construct and expertise have not kept pace. Today, more than ever, we need a deeper and holistic understanding of

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the broad mission area to help design appropriate and adaptive constructs that meet the C2 demands of the operational and tactical levels of war.

Discussing C2 can be a challenge because of the breadth of the topic and because we use similar words to express distinctly different meanings. When discussing air superiority; global strike; global mobility; and intelligence, surveillance, and reconnaissance (ISR), we readily understand the core meanings of these functions. This is not the case with C2. The denotation of that term varies across the levels of war; by service, mediums, career fields, and platforms; and across the realms of academics, joint-requirements modelers, and contractors—key partners in the development of C2 concepts and capabilities. Whether because of this confusion or in spite of it, among all five core missions of the Air Force, the intangible C2 tends to be the most assumed—an invisible given in our operations and our modeling. These challenges in understanding C2, coupled with the sense of its presumed ubiquity, prompt lingering questions about our C2 operations writ large.

As the Air Force faces sequestration budgets, basic and honest inquiries arise concerning its C2 operations. What “amount” of C2 is required, and how will we provide it? Who is qualified to do it—everyone? How is the task of airborne battle management appropriately and adaptively integrated along the spectrum of C2? Our success with remotely piloted aircraft and reachback ISR systems prompts the question, why can’t we conduct tactical C2 remotely? Furthermore, can we do without it in the future if “fifth-generation” fighter/bomber aircraft have all the situational awareness (SA) they need? Addressing these questions demands fresh evidence and perspective but is also served by a reminder of enduring truths. The articles featured in this issue of *Air and Space Power Journal* use historical accounts, case studies, and theory to examine aspects of these honest inquiries.

In terms of scope, these articles touch all three levels of war, emphasizing the often-neglected tactical level of C2, where war takes on its most tangible forms. This level offers a detailed look at what C2 really



entails in the battlespace. Although designed to be platform agnostic, most of the articles incorporate recent experience with the Joint Surveillance Target Attack Radar System (JSTARS), providing a practical framework for the theoretical discussions. It is this discussion in theory that will repave the path ahead for better understanding and operational performance in this complex core function. To move down this path requires a common frame of reference.

## 10 Propositions Regarding Command and Control

Ten general propositions concerning C2 emerge from the following articles. First, *C2 is a joint function with established tasks and doctrine*. Decades of US experience with C2 operations are layered into Joint Publication (JP) 1, *Doctrine for the Armed Forces of the United States*; JP 1-02, *Department of Defense Dictionary of Military and Associated Terms*; JP 3-0, *Joint Operations*; JP 6-0, *Joint Communications System*; and other governing doctrine. The prevalence of C2 in our joint doctrine reflects the centrality of performing C2 well and the tragedy of doing it poorly (e.g., Operation Eagle Claw during the Iran hostage crisis; the 1994 Blackhawk shoot-down in Operation Northern Watch; Operation Anaconda in Afghanistan; blue-on-blue Patriot engagements in 2003; and various incidents of civilian casualties). Those who ponder a future in which C2 is conducted safely remote from the chaos of battle might then be asked how this reconciles with the collective wisdom of such established and pervasive joint doctrine.

Second, *C2 requires unique operational competencies that span all military operations*. This statement contains two unique elements (competency and span of task) that coalesce into a unified theme: the ability to perform effective C2 is not simply inherent in the ability to accomplish other operational tasks. The pervasive need for C2 within all military operations oftentimes has the pernicious effect of making it appear as a rudimentary task, the effective performance of which is inherently innate to those operations. Unique C2 competencies exist; they are required to translate a commander's vision into action; and



they are joint. Some articles in this issue convey these facts through operational vignettes that span multiple combatant commands and various levels of conflict. They demonstrate a desired end state in which military battle managers are trained to bring order from chaos, condensing stunningly complex environments into an understandable battlespace. All of these articles share a central theme—that these competencies must span every DOD operation, using doctrinally consistent skills which yield high-functioning C2 systems transportable to any fight.

Third, *airborne C2 inherently expands a commander's influence over operations*. From Marshal Mikhail Tukhachevskii forward, military thinkers valued the superior operational oversight from C2 in the air. By means of its mobility, airborne C2 offers range, reach, and adaptability—coupled with unique communications and surveillance feeds unmatched from space—to provide in situ problem solvers who align understanding of the commander's intent to the chaos of actual conflict. Many forms of remote C2 have been demonstrated, ranging from our own air defense sectors in the continental United States to some operations in US Central Command today. These options, however, require vast capital investments and years of infrastructure development that could not be matched in, say, Operation Odyssey Dawn / Unified Protector in Libya. Living without airborne C2 would also ignore the vast number of operations that still occur on line-of-sight radios, which cannot be heard remotely on any scale necessary to maintain C2 over a conventional fight.

Fourth, *overcoming fog, friction, and chance calls for continuous, in-battlespace problem solving with on-scene SA*. The US Africa Command and maritime case studies in this issue illustrate how much problem solving and initiative really take place at the tactical level of C2. Advances in reachback communication architectures, which have enabled routine strike and ISR missions, have prompted an increasing desire to push existing strategic- and operational-level reachback C2 down to the tactical level. This discussion, though certainly valuable,



must be informed by “facts on the ground” and not analogy. Central to such dialogue is an understanding of the vast amount of decision making at the tactical level that is never made apparent outside the physical battlespace. When operations like Odyssey Dawn / Unified Protector in Libya succeed, no one sees the suspension of naval gunfire due to dense Strike Eagle operations in an open kill box. Nor does anyone know about the positive identification of non-English-speaking partisan forces *not* killed due to high levels of localized SA. Rather, the fact that those outside the battlespace simply see the successful outcome inherently masks the vast amount of problem solving that actually occurs in the battlespace, far removed from observers.

Fifth, *C2 arrangements supply an action arm in the battlespace by leveraging SA from all levels of war.* Arguably, we have developed the most powerful ISR capabilities in the history of the world. Additionally, fifth-generation aircraft present their own source of SA in new ways. Without the unifying force that is C2, these amazing technical advances may realize only individual success or localized advantage rather than broader operational-level advances. This point is further reinforced when we remember that the development and sharing of SA remain anchored in part to line-of-sight radio communications, with many participants in the air, on the ground, or at sea lacking dependable voice-satellite capability. Even if we cultivate such capability for all of the DOD, we will still require the line-of-sight radio for continuity of operations if an adversary “turns off” space.

Sixth, *the importance of C2 increases with operational complexity and cultural expectations about precision.* In his article “C2 Rising,” Lt Col Paul Maykish shows a gradual rise in the significance and scale of C2 operations based on megatrends in war and an understanding of the unchanging nature of C2. An additional rise in the need to comprehend and develop adaptive C2 constructs derives from shifts in American culture that must be matched by more elegant solutions. From Operation Desert Storm forward, America and its coalition partners expect ever-increasing precision in operations. This enhanced expecta-



tion of precision and reduced tolerance for loss of life and destruction of property demand more operational oversight, not less—a situation that presents a paradox. That is, we prefer as little C2 as necessary to carry out missions but must have enough to satisfy the amount of oversight that our nation expects of a highly precise and less wantonly destructive military.

Seventh, *C2 systems ill matched to specific operations may produce dysfunction*. Voids in C2 systems force ad hoc arrangements to fulfill the unchanging C2 sub-functions. Several modern examples of C2 voids come to mind. For Odyssey Dawn / Unified Protector, JSTARS was initially tasked to support operations in Libya as an ISR asset but quickly filled operational-level C2 voids by chance rather than design (see “Command and Control in Africa” by Maj Damon Matlock, Maj Jonathan Gaustad, Maj Jason Scott, and Capt Danielle Bales). The joint air-to-ground integration cell, an initiative centered on large-scale close air support, addresses voids in the theater air control system in the old air support operations center’s sphere of influence. The dynamic air response coordination cell is an ad hoc C2 node that is forming to deal with an Air Force–Navy seam for rerolling aircraft to new missions. Special Operations Command has created a tactical air coordinator (airborne) role to manage higher-volume air operations associated with raids. Finally, numerous ongoing C2-of-ISR projects are driven largely by perceived C2-function-based voids.

All five examples may be good C2 adaptations worthy of praise, but they also serve as evidence. When we fail to honor the C2 sub-functions, voids appear that eventually must be filled. Every one of these is a window into what happens when C2 capabilities do not match an operational need. In these cases, we have seen the C2 voids and have adapted with the luxury of time. Without such a luxury in future conflicts, what burden do we levy upon commander(s) that could be more easily resolved by adaptive and appropriately constructed C2 systems?

Eighth, *to have high-functioning C2, we must consider all aspects of the C2 system (e.g., C2 professionals, doctrine/tactics, competencies, skills,*





*platforms, technologies, plans, authorities, tasks, sub-functions, and effects*). The sheer complexity of the C2 mission area makes taking a holistic view challenging. Whether due to the magnitude of the task, differing service views of C2, or confusion about how we discuss the topic, coherently integrating the many aspects of C2 has proven problematic, oftentimes leading to suboptimal operational results. Descriptively, C2 operations remind us of the classic story of the Sufi elephant in which blind men examine one part of the creature, each believing that it represents the whole but all presenting vastly different views of the beast. Similarly, when we address C2 questions, we will find it helpful to consider all parts of the system to determine if our concepts lead us to holistic, adaptive, and effective ends.

Ninth, *commanders control operations in a mix of three ways: in person, by plans (e.g., the joint air operations plan, air operations directive, air tasking order, and airspace control order), and by delegation with intent (e.g., decentralized execution, distributed C2, mission-type orders, and mission command)*.<sup>1</sup> Currently, the Air Force is navigating this spectrum of control with the idea of moving authorities for certain C2 tasks down to the tactical level of war. The “distributed C2” concept is a response to contested, degraded environments.<sup>2</sup> Yet, the concept is moving forward, accompanied by uneasiness regarding the risks we take if we distribute more decision making “to the edge.”<sup>3</sup> Martin van Creveld notes that this is normal in dealing with uncertainty in war insofar as centralization and decentralization come down to “readiness at higher headquarters to accept more uncertainty while simultaneously reducing it at lower ones.”<sup>4</sup> He captures the idea that all centralized/decentralized debates in military operations simply come down to where we distribute uncertainty in war.

Finally, *the measure of merit for any C2 system is results—accomplishing missions in any situation*. Never really about career fields, platforms, or specific capabilities, C2 operations instead have to do with strength in the form of adaptive integration—that essential requirement to forge mission accomplishment in diverse joint and coalition fights. A recur-





ring theme throughout this C2 focus issue is that our strength lies not singularly in our people, ideas, weapons, or platforms but in their systematic and adaptive integration via C2—by way of the unifying vision of a commander. Results are, and will always remain, the ultimate measure of merit for our thoughts regarding C2.

## Conclusion

Commanding and controlling forces reflect an immutable need of a commander to array and employ those forces. The core challenges—to commanders and, by extension, the C2 function—are enduring. The specific methods and means to do so have changed over time, but effective C2 has always called for unique competencies and systems. Given the complexity of the topic, refocusing within the DOD to meet the demands of over a dozen years of counterinsurgency and counterterrorism operations and, now, declining military budgets, we must engage in informed discussion about the C2 needs of commanders to deal with warfare that is increasingly distributed, complex, and varied. Thus, to overcome the inevitable fog, friction, and chance that these future commanders will face, we need mobile and adaptive C2 capable of bringing order from chaos—just as we needed it when the first observation balloon launched. The articles in this issue of *Air and Space Power Journal* work towards clarifying a modern doctrinal understanding of C2 by offering research and discussion informed by the actual work of today's C2 operations. ★

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## Notes

1. Adapted from Allan English, Richard Gimblett, and Howard G. Coombs, *Networked Operations and Transformation: Context and Canadian Contributions* (Montreal: McGill-Queen's University Press, 2007), 19–20.
2. See Lt Col Alan Docauer, "Peeling the Onion: Why Centralized Control / Decentralized Execution Works," *Air and Space Power Journal* 28, no. 2 (March–April 2014): 24–44, <http://www.airpower.maxwell.af.mil/digital/PDF/Issues/2014/ASPJ-Mar-Apr-2014.pdf>.



3. David S. Alberts and Richard E. Hayes, *Power to the Edge: Command, Control in the Information Age*, Information Age Transformation Series (Washington, DC: CCRP Publication Series, 2003).

4. Martin van Creveld, *Command in War* (Cambridge, MA: Harvard University Press, 1985), 274.



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